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Raytheon E-Systems

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Office of the Secretary

Federal Communications Commission

Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

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Subject: Reply Comment to CC Docket 94-102 (original and 9 copies)

Dear Sir:

Raytheon E-Systems herein provides reply comments on proposed new rulemaking contained in paragraphs 137 - 142 of CC Docket No. 94-102, "Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems." Raytheon E-Systems is a supplier of electronic equipment to the government and commercial markets, including equipment to geolocate radio transmitters. Over the last 3 years Raytheon E-Systems has conducted field trials of our infrastructure-based location equipment for the cellular operating bands in multiple markets in the United States. One extensive trial was performed in partnership with the U.S. Department of Transportation, Federal Highway Administration as part of the ITS (Intelligent Transportation System) Field Operational Test program. Our comments are based on the performance of the equipment during these trials, and our estimate of the next generation location finding equipment performance and comparative cost based on foreseeable technology advances.

Raytheon E-Systems' testing indicates that the 125 meter, 1 sigma, location accuracy contained within the current rulemaking is consistent with the performance of infrastructure-based equipment, location finding algorithms, and existing deployment concepts. Our on-going research and development efforts have addressed, and continue to explore, the many challenges of widespread deployment of location finding equipment, including increasing positioning accuracy and reducing cost and complexity. Based on these activities, we feel that order of magnitude position accuracy improvements for conceived, or contemplated, improvements in state-of-the-art systems architecture and equipment appear to be unlikely in the foreseeable future. Given the Commission's current actions to cause location equipment to be widely deployed to support wireless E911, over the next few years a new body of knowledge and experience on developing, installing and operating location systems will be gained. This new knowledge and experience may foster innovative approaches to increased position accuracy in the future. However, the mere suggestion of increasing accuracy requirements will likely have the effect of delaying investment in location technology therefore significantly reducing the opportunities for advancing the state-of-the-art. Therefore, we recommend that any



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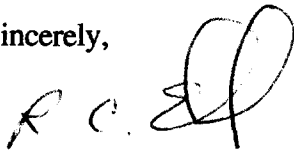
rulemaking related to higher positional accuracy and confidence be deferred until such time as industry can reasonably be expected to achieve such requirements.

Raytheon E-Systems has designed and built location finding equipment which is capable of, and has been extensively tested for, latitude-longitude positioning. We believe that the design, deployment and installation of a infrastructure based location finding system preclude reliable measurement of mobile subscriber vertical location to any usable accuracy. Significant changes to the equipment architecture and deployment strategy would be necessary to achieve altitude data. These changes would adversely affect current generation equipment cost and straightforward deployment viability. Our research and development activities in this area indicate no foreseeable breakthroughs which will allow vertical location to be obtained in a cost effective and straightforward way in the future. In a similar vein to our recommendation on increased location accuracy and confidence, we recommend that any rule making related to vertical location be deferred until the knowledge and experience gained through widespread deployment of these systems is completed, potentially yielding new and viable approaches to vertical location.

In the course of conducting field trials on location equipment, Raytheon E-Systems has measured latency from call initiation to location reporting, and has updated location on a mobile subscriber while a call was in process. Though the trials were not specifically oriented towards E911 needs, latencies of 5 seconds and update rates of 1 per 10 seconds were achieved. It is therefore, our position that these requirements can be supported based on existing technology.

Should you have any questions concerning this response, please contact Mr. Robert C. Ewald, Raytheon E-Systems, Falls Church Division at (703) 208-1211.

Sincerely,



R.C. Ewald
Product Manager

cc: Federal Communications Commission

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